What is claimed is:

1. A method for inspecting food products, the method comprising:

(A) generating reference images of food products, each reference image being indicative of a food product of a different size, each reference image having optimized characteristics that are indicative of an acceptable food product, the optimized characteristics of each reference image comprising:

(A1) an optimized red component;

(A2) an optimized green component;

(A3) an optimized blue component; and

(A4) an optimized shape;

(B) acquiring a sample image of a sample food product, the sample image comprising:

(B1) a red component;

(B2) a green component;

(B3) a blue component;

(B4) a sample shape; and

(B5) a sample size;

(C) comparing the sample size to each of the generated reference images;

(D) selecting the reference image that is indicative of a food product having a size that is similar to the sample size;

(E) generating a contrast image as a function of the selected reference image and the sample image, the contrast image being indicative of deviations of the sample image from the selected reference image, the contrast image comprising:

(E1) a red component deviation value;

(E2) a green component deviation value;

(E3) a blue component deviation value; and

(E4) a shape deviation value indicative; and

(F) determining an acceptability level of the sample food product, the acceptability level being a function of:

(F1) the red component deviation value;

(F2) the green component deviation value;

(F3) the blue component deviation value; and

(F4) the shape deviation value.

2. A method for inspecting food products, the method comprising:

(A) acquiring a sample image of a sample food product, the sample image comprising:

(A1) a red component;

(A2) a green component;

(A3) a blue component;

(B) generating a reference value from the acquired sample image, the reference value being a function of the red component, the green component, and the blue component;

(C) generating a contrast image as a function of the reference value and the sample image, the contrast image being indicative of deviations of the sample image from the reference value, the contrast image comprising:

(C1) a red component deviation value;

(C2) a green component deviation value; and

(C3) a blue component deviation value; and

(D) determining an acceptability level of the sample food product, the acceptability level being a function of:

(D1) the red component deviation value;

(D2) the green component deviation value; and

(D3) the blue component deviation value.

3. A method for inspecting food products, the method comprising:

generating reference images of food products, each reference image being indicative of a food product of a different size, each reference image having optimized characteristics that are indicative of an acceptable food product;

acquiring a sample image of a sample food product, the sample food product having a sample size;

comparing the sample size to each of the generated reference images;

selecting the reference image that is indicative of a food product having a size that is similar to the sample size;

generating a contrast image as a function of the selected reference image and the sample image, the contrast image being indicative of deviations of the sample image from the selected reference image; and

determining an acceptability level of the sample food product from the generated contrast image.

4. A method for inspecting food products, the method comprising:

acquiring a sample image of a sample food product;

generating a reference value from the acquired sample image;

generating a contrast image as a function of the reference value and the sample image, the contrast image being indicative of deviations of the sample image from the reference value;

determining an acceptability level of the sample food product from the generated contrast image.

5. A method for extracting image features, the method comprising:

providing reference data having reference features;

acquiring image data;

generating contrast data as a function of the reference data and the image data;

performing a clustering algorithm on the contrast data to generate clusters of contrast data; and

identifying features from the clusters of contrast data.

6. A method for detecting defects in products, the method comprising:

providing reference data having reference features, the reference features representing features of an optimized product;

acquiring sample data having sample features, the sample features representing features of a sample product, each of the sample features corresponding to one of the reference features;

generating contrast data as a function of the reference data and the sample data, the contrast data having contrast features, the contrast features representing deviations between the sample features and the reference features; and

determining an acceptability level of the sample product from the generated contrast data.

7. The method of claim 6, further comprising:

discarding the sample product in response to determining that the acceptability level of the sample product is below an acceptable threshold level.

8. The method of claim 6, further comprising:

retaining the sample product in response to determining that the acceptability level of the sample product is not below an acceptable threshold level.

9. The method of claim 6, wherein the step of acquiring the sample data comprises:

acquiring an image of a food product.

10. The method of claim 6, wherein the food product is selected from a group consisting of:

meats;

grains

vegetables;

fruits;

legumes; and

processed food items.

11. The method of claim 6, wherein the step of providing the reference data comprises:

acquiring an image of the optimized product, the example product having minimal defects; and

storing the acquired image.

12. The method of claim 6, wherein the step of providing the reference data comprises:

evaluating data points within the sample data;

calculating the mode of the data points; and

storing the mode.

13. The method of claim 6, wherein the step of providing the reference data comprises:

evaluating data points within the sample data;

calculating the mean of the data points; and

storing the mean.

14. The method of claim 6, wherein the step of providing the reference data comprises:

updating a reference value of a current sample with a reference value of a previous sample.

15. The method of claim 6, wherein the step of generating the contrast data comprises:

determining a difference between the reference data and the sample data to generate difference data.

16. The method of claim 15, wherein the step of determining the difference comprises:

extracting spectral components from the reference data;

extracting spectral components from the sample data, each of the spectral components of the sample data corresponding to one of the spectral components of the reference data; and

determining the difference between a spectral component from the reference data and a corresponding spectral component from the sample data.

17. The method of claim 16, wherein the step of extracting the spectral components from the reference data comprises a step selected from the group consisting of:

extracting a red component from the reference data;

extracting a green component from the reference data; and

extracting a blue component from the reference data.

18. The method of claim 16, wherein the step of extracting the spectral components from the sample data comprises a step selected from the group consisting of:

extracting a red component from the sample data;

extracting a green component from the sample data; and

extracting a blue component from the sample data.

19. The method of claim 15, further comprising:

normalizing the difference data to the reference data.

20. The method of claim 6, wherein the step of determining the acceptability level comprises:

clustering the contrast features into predetermined cluster groups, each cluster group corresponding to a contrast feature; and

evaluating the size of each cluster group to quantitatively determine the amount of each contrast feature.

21. The method of claim 20, wherein at least one of the cluster groups corresponds to a defect feature.

22. The method of claim 6, further comprising:

updating the reference data with information gathered from the sample data.

23. A system for detecting defects in products, the system comprising:

reference data having reference features, the reference features representing features of an optimized product;

sample data having sample features, the sample features representing features of a sample product, each of the sample features corresponding to one of the reference features;

logic configured to generate contrast data as a function of the reference data and the sample data, the contrast data having contrast features, the contrast features representing deviations between the sample features and the reference features; and

logic configured to determine an acceptability level of the sample product from the generated contrast data.

24. The system of claim 23, wherein the step of acquiring the sample data comprises:

means for acquiring an image of a food product.

25. The system of claim 23, wherein the step of acquiring the sample data comprises:

logic configured to acquire an image of a food product.

26. The system of claim 23, wherein the food product is selected from a group consisting of:

meats;

grains

vegetables;

fruits;

legumes; and

processed food items.